

## Summary

### Proposed Project

Western Area Power Administration (Western) is proposing to upgrade the existing Cheyenne-Miracle Mile (CH-MM) and Ault-Cheyenne (AU-CH) 115 kilovolt (115-kV ) transmission lines to 230-kV. The proposed project consists of rebuilding these transmission lines and making modifications to Western's existing Miracle Mile, Cheyenne and Ault Substations to accommodate the 230-kV circuits. A new Snowy Range Substation would also be build near Laramie, Wyoming.

The existing CH-MM 115-kV transmission line is 146 miles in length, and crosses Carbon, Albany, and Laramie Counties in Wyoming. The Cheyenne-Ault 115-kV transmission line is 35 miles in length and crosses portions of Laramie County, Wyoming and Weld County, Colorado. Western proposes to upgrade the existing transmission lines by removing the existing 115-kV H-frame structures and replacing them with new 230-kV H-frame structures and single pole steel structures. Western also proposes to widen the existing right-of-way (ROW), where necessary to allow adequate electrical clearances. The proposed project entails the following specific actions:

- Cheyenne-Miracle Mile Transmission Line Rebuild (146 miles).
  - No structural changes would be made to the existing transmission line for the first 6.6 miles south of the Miracle Mile Substation. This portion of the CH-MM line was reconstructed with lattice steel 230-kV structures in 1992. The existing 954 ACSR conductor, currently operated at 115-kV voltage is sufficient for future 230-kV operation.
  - Approximately 140 miles of the existing CH-MM 115-kV transmission line, including transmission structures, conductors and hardware would be dismantled and removed. The existing line would be dismantled from approximately 6.6 miles south of the Miracle Mile Substation to the Cheyenne Substation in Wyoming.
  - Approximately 1017 new 230-kV wood H-frame structures would be installed along 134.8 miles of Western's ROW, from approximately 6.6 miles south of Miracle Mile Substation to the vicinity of the Happy Jack Substation, approximately 5.0 miles from the Cheyenne Substation.
  - Approximately 26 double circuit 115-kV/230-kV single pole steel structures would be installed for 5.0 miles through the City of Cheyenne, from the vicinity of the Happy Jack Substation to the Cheyenne Substation. Along this stretch of the proposed project, Western would remove both the existing CH-MM and HJ-MM H-frame structures. The new double circuit single pole steel structure would support both the proposed CH-MM 230-kV circuit and the existing HJ-MM 115-kV circuit. No widening of the existing ROW would be required along this stretch of the project.

- Western would widen the existing CH-MM ROW for approximately 134.8 miles, from 6.6 miles south of the Miracle Mile Substation to the Happy Jack Substation, 5.0 miles west of the Cheyenne Substation. The ROW would be expanded to accommodate electrical clearances for the proposed 230-kV transmission line. ROW expansion requirements would vary, depending on the width of the existing ROW and whether the existing ROW overlaps with the HJ-MM transmission line ROW.
- No major new access roads would be constructed. Existing access roads would be used and improved where required to control erosion. Some spur roads within the ROW would be constructed where necessary to access new structure sites.
- Ault-Cheyenne Transmission Line Rebuild (35 miles)
  - The existing AU-CH 115-kV transmission line, including wood H-frame transmission structures, conductors and hardware would be dismantled and removed for approximately 32 miles, from the Cheyenne Substation to approximately 3 miles north of the Ault Substation.
  - Approximately 166 double circuit 115-kV/230-kV single pole steel structures would be installed along 32 miles of the AU-CH transmission line ROW. The new double circuit single pole steel structures would support both the proposed AU-CH 230-kV circuit and the existing 115-kV circuit.
  - From approximately three miles north of the Ault Substation (MP 32.1 to MP 35), Western would locate the proposed 230-kV AU-CH transmission line on Western's existing Archer-Ault lattice structures. Along this segment, approximately 24 new wood H-frame structures would be constructed, east of the existing ROW, in order to relocate an existing 115-kV circuit currently occupying one position on the lattice structures.
  - Western would widen the existing AU-CH ROW for approximately 30 miles, from 5.2 miles south of the Cheyenne Substation to the Ault Substation. The ROW would be expanded to accommodate electrical clearances for the proposed 230-kV transmission line. ROW expansion requirements would vary, depending on the width of the existing ROW and transmission facilities proposed. No expansion of the ROW is proposed for 5.2 miles south of the Cheyenne Substation
  - No major new access roads would be constructed. Existing access roads would be used and may be improved if necessary to control erosion. Spur roads would be constructed within the ROW where necessary to access new structure sites.
- Proposed Snowy Range Substation and Modifications to the Miracle Mile, Cheyenne and Ault Substations

Western is proposing to construct a new 'Snowy Range Substation' near Laramie, Wyoming, to sectionalize the Cheyenne-Miracle Mile and Cheyenne-Happy Jack-Miracle Mile 115-kV transmission lines and to make several upgrades to the existing Miracle Mile, Cheyenne and Ault substations:

- The proposed Snowy Range Substation would be a 115/230-kV sectionalizing substation, approximately 16 acres in size. Western is acquiring approximately 32 acres for the new substation site and transmission line approaches into the substation. The substation equipment would consist of a three breaker 230-kV ring bus, one 200 MVA, 115/230-kV transformer and a six-bay 115-kV main and transfer bus. Construction of the 115-kV facilities would occur in 2007 followed by construction of 230-kV facilities in 2009.
- Western would modify the existing Miracle Mile, Cheyenne, and Ault Substations. All substation changes would be within the existing fenced substation facilities. The Miracle Mile Substation additions would include two 230-kV line bays and one 200 MVA, 115/230-kV transformer. The Cheyenne Substation additions would consist of a three-breaker 230-kV ring bus and one 200 MVA, 115/230-kV transformer. The Ault Substation would be modified to add one 230-kV line bay.

### **Purpose and Need**

The purpose of the CH-MM and AU-CH Transmission Line Rebuild Project is to ensure Western's ability to provide reliable and cost efficient electric power and to provide additional transfer capacity to Western's highly loaded TOT3 operations boundary. The TOT3 boundary consists of six line sections along the border between Northeast Colorado and Southeast Wyoming: Sidney-Sterling 115-kV, Cheyenne-Rockport 115-kV, Archer-Ault 230-kV, Sidney-North Yuma 230-kV, Laramie River-Ault 345-kV and Laramie River-Story 345-kV transmission lines. The Cheyenne-Rockport 115-kV line section is part of the AU-CH 115-kV Line.

At the present time, all available capacity in the CH-MM line is being used in long-term firm transmission or on a short-term basis. Forty megawatts is reserved for wind generation use, and prospective wind generation customers have made several inquiries for additional line capacity.

Except for six miles of double circuit lattice steel 230-kV construction from Miracle Mile that was constructed in 1992, the CH-MM 115-kV transmission line was constructed in 1939 with predominantly cedar wood H-frame structures and 250 kcmil hollow copper conductor. The line currently has a thermal rating of 109 MVA. The AU-CH 115-kV line was also built in 1938-1939. Many of the wood H-frame structures used in the original construction of the transmission lines are still in use today, and are approaching, or have exceeded the end of their useful service life. As a consequence, the existing transmission lines are beginning to require increased amounts of maintenance to ensure worker safety and line reliability.

### **Alternatives Considered and Eliminated**

Western conducted a number of system planning studies from January 2003 through March 2004 to consider various replacement options for these lines. The system studies considered replacements at both 115-kV and 230-kV voltages, using a variety of structure designs. The 230-kV voltage was chosen since a 75 MW benefit to TOT3 would occur if both the CH-MM and AU-CH lines are upgraded to 230-kV.

Alternatives considered and eliminated for the CH-MM rebuild included reconductoring the existing 115-kV line, constructing a new 115-kV line on wood H-frame or light duty steel H-frame structures, and constructing a new 115/230-kV line on lattice steel or single pole structures.

An alternative to the AU-CH rebuild that was considered was constructing a new 115-kV line on wood H-frame or light duty steel structures. All of these system design and voltage alternatives were eliminated since they do not meet Western's purpose and need, with the exception of the single pole steel or the lattice steel alternative. None of these alternatives would provide the benefit of increasing the TOT3 transfer capability by an additional 75 MW. Single pole steel and lattice steel structures were eliminated based on costs.

### Scope of Environmental Assessment

This Environmental Assessment (EA) has been prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and Department of Energy (DOE) guidance. This EA identifies and analyzes the consequences of the proposed project and the no action alternative on the human and natural environment. The proposed project incorporates Western's standard construction practices and mitigation measures to avoid and minimize impacts to the extent feasible. In addition, Western has developed a number of project-specific measures to address impact issues for the project. The EA analyzes the proposed project and the implementation of these measures. In addition, two transmission line routing alternatives are evaluated. Alternatives were identified to minimize impacts to land uses, visual resources, wetlands and soils. These alternatives include:

- CH-MM Alternative Route 1
  - CH-MM Alternative Route 1 is approximately 16.2 miles long, located north and west of Laramie, Wyoming, and is divided into two parts, A and B. The alternative would diverge from the proposed project as follows:
  - MP 40 to MP 91 – This segment includes the swap of the CH-MM and HJ-MM line sections near the Medicine Bow Tap (MP 47), to continue connection of the Medicine Bow Tap to the remaining HJ-MM 115-kV line. The existing HJ-MM line section is rerouted onto the original CH-MM ROW and the new CH-MM 230-kV line is rerouted onto the HJ-MM ROW.
  - MP 91 to MP 100 – This segment includes CH-MM Alternative Route 1, Part A and B. Part A is identified as the 230-kV wood H-frame structure rebuild north of Laramie from MP 91 to MP 100 on existing HJ-MM ROW. The remainder of CH-MM Alternative Route 1, Part B is the swap of the CH-MM and HJ-MM lines near MP 91 to construct the new 230-kV line on the HJ-MM ROW and to rebuild a portion of the HJ-MM line on the original CH-MM line section from MP 91 to the Laramie Substation. This portion of the line construction on the original CH-MM line section would consist of 115-kV single circuit wood H-frame, except from approximately MP 97 to MP 99 where single pole steel structure construction would occur.

CH-MM Alternative Route 1 allows Western to use the existing ROW of the HJ-MM 115-kV line section under Part A for the CH-MM transmission line rebuild, rather than incur the cost of new ROW in parallel with the existing line. The ROW would be widened. Rebuilding Part B from Snowy Range Substation to the west line split, allows Western to remove the existing line and to rebuild the new portion of the 115-kV HJ-MM transmission line, again using an existing ROW. The ROW would be widened. Pursuing CH-MM Alternative Route 1 allows Western to minimize transmission line outages during the construction of the line swaps at Medicine Bow Tap and at the West Split. Further, once the swaps have occurred, Western has the ability to deenergize

nearly 100 miles of line from the Miracle Mile Substation to the Snowy Range substation to systematically remove and rebuild the transmission line on the existing ROW. No significant impact would result from CH-MM Alternative Route 1.

- AU-CH Alternative Route 2
  - AU-CH Alternative Route 2 consists of localized realignments of the proposed project between MPs 17 and 32.5, where Western's AU-CH and ARH-AU transmission lines are intermittently located east and west of rural homes and buildings, respectively. Under this alternative, the AU-CH line would be located adjacent and parallel to the existing ARH-AU transmission line.

## Summary of Findings

The EA evaluates the short-term and long-term impacts that may result from the construction and operation of the proposed project and alternatives. The results of the resource evaluations are compared on Table S-1 (at the end of this section), and include the following findings:

**Air Quality** – The proposed project and alternatives would have very minor, local, short-term effects on air quality, limited primarily to short-term emissions from construction vehicles and fugitive dust generated by construction activity. The project would have no effect on climate. The project and alternatives would be in compliance with National Ambient Air Quality Standards and the State Implementation plans for both Wyoming and Colorado. There are no federal or state permitting requirements for this source type.

**Geology, Soils and Paleontology** – There are no known geologic hazards (i.e. areas prone to liquefaction, active wind blown sand or landslides) within the project area, although numerous steep slopes are present in the northern part of the CH-MM ROW. The project area also crosses several fossil-bearing formations along the CH-MM route including the Cloverly (Jurassic), Sundance (Jurassic) and Morrison (Jurassic) Hanna (Paleocene). The proposed project and alternatives would result in surficial soil disturbances at localized areas within Western's ROW. Short-term impacts on soils would result where project construction activities cause the loss of vegetation cover. Along the proposed project transmission line ROWs, these areas would be limited to structure sites, and where Western's existing access road is improved with minor re-grading and where spur roads are build. No blasting would be required for structure hole excavations, which would typically be 6 to 10 feet deep. Soils disturbances would also occur at the new Snowy Range Substation site. Impacts to soils would be less than significant for the proposed project and alternatives due to the relatively minor amounts of surficial disturbances that would occur. In total, the proposed project or alternatives would result in the short-term disturbances of approximately 501 or 525 acres, respectively, for the transmission line rebuilds and 32 acres at the new Snowy Range Substation site. Long-term soil disturbance would be 0.9 acres for CH-MM, 0.1 acres for AU-CH, and 16 acres for the Snowy Range Substation. Western would implement a number of standard measures to control erosion and facilitate the re-growth of native vegetation in disturbed areas.

**Water Resources** – The project area is within the North Platte and South Platte River watersheds. The proposed project crosses 232 surface waters, with the largest surface waters being the Medicine Bow and Laramie Rivers in Wyoming. Water quality within the project area ranges from good to poor, and surface water use is primarily for agriculture, livestock and wildlife ponds. The proposed project and alternatives would have minor, and less than significant impacts on surface waters and water quality since all surface waters would be spanned, and no

surface water use is proposed. Western would also implement standard construction measures to ensure that the potential for accidental discharges or contamination are minimized during the construction of the project and during routine maintenance activities. Standard construction measures, including erosion control measures, would also be implemented to reduce the potential for sedimentation and water quality impacts.

The impacts of the alternatives would be similar to the proposed project. CH-MM Alternative Route 1, Part A would cross seven surface water bodies. CH-MM Alternative Route 1, Part B would also cross 7 surface water bodies. No surface waters are crossed by AU-CH Alternative Route 2.

**Floodplains and Wetlands** – The proposed project would cross or intersect floodplains at 16 locations on the CH-MM transmission line ROW and at two locations on the AU-CH transmission line ROW. The largest floodplains are at the Little Laramie River/Brown's Creek confluence northwest of Laramie and at the Rock Creek/Three Mile Creek/Coal Bank Creek confluence southwest of Rock River. The proposed project would also intersect or cross an estimated 54 potential wetlands. No floodplains or wetlands occur at or adjacent to the Snowy Range Substation, with the closest water way being approximately 0.5 mile away. The impacts of the proposed project would be low, and less than significant where floodplains and wetlands would be spanned. The floodplains and wetlands crossed at the Rock Creek/Three Mile Creek/Coal Bank Creek and the Little Laramie River cannot be spanned, however, because of the width, thus some direct disturbance in these wetlands and floodplains would occur. Disturbances would be limited to the installation of up to two structures (approx. 0.3 acre during construction). Long-term disturbance would be limited to the footprint of up to two structures (less than 0.001 acre). Western would obtain necessary permits from the U.S. Army Corps of Engineers and would implement a number of standard construction practices and mitigation measures to minimize erosion and sedimentation. Western would also implement a Spill Response Plan to control and clean up any accidental spills.

The alternatives would have similar potential impacts to wetlands and floodplains. CH-MM Alternative Route 1, Part A would cross one floodplain at the Laramie River, where two structures would also be required in the floodplain due to its width at this location. For Part B of CH-MM Alternative Route 1 (the rebuild of the HJ-MM 115-kV transmission line on the existing CH-MM 115-kV transmission line ROW), the floodplain at the Laramie River would also be crossed. AU-CH Alternative Route 2 does not cross any floodplains or wetlands and thus would not impact these resources.

**Vegetation** – The proposed project and alternatives would result in the short-term disturbance of 501 or 525 acres, respectively, of predominantly native vegetation along the transmission line ROWs. An additional 32 acres would be disturbed temporarily at the new Snowy Range Substation. Predominant vegetation types affected include mixed grass prairie, short grass prairie, Wyoming big sagebrush steppe and dry land and irrigated cropland. The vast majority of area affected during construction would be reclaimed following construction. Approximately 1.0 acre would be disturbed long-term within the ROWs for the proposed project or alternatives, and an additional 16 acres would be disturbed long-term at the new substation. Impacts to vegetation would not be significant due to the relatively small amount of area disturbed long-term and the short-term nature of construction disturbances. Western would also use standard construction practices to minimize the introduction and/or spread of invasive species or weeds.

**Wildlife** – The project area supports habitat for a number of wildlife species, including big game (pronghorn, elk), smaller mammals, raptors, upland game birds (greater sage-grouse, Columbian

sharp-tailed grouse), other birds (passerines, waterfowl, shorebirds, waders) and fisheries. The proposed project would have the potential to impact critical winter range of pronghorn or elk, as well as result in the direct mortality of small, less mobile mammals within the corridor, or disturb active raptor nests. The potential for these types of impacts occurring would be minimized below a level of significance with Western's standard construction practices and mitigation measures. Construction would not occur between November 15th and April 30th, unless an exception is granted by BLM, and Western would conduct raptor nest inventories prior to construction to implement appropriate mitigation to prevent the project from disrupting active nests. Western would also implement standard construction and design mitigation practices to eliminate the potential for raptor electrocution. Risks of collision would be similar to the existing conditions, since the existing transmission facilities have been a part of the landscape since the 1930's. The impacts of the alternatives would be the same or similar to those of the proposed project.

**Special Status and Sensitive Species** – The following federally threatened, endangered, proposed and candidate species (TEP&C) and their critical habitats are known to occur within the proposed project area: Preble's meadow jumping mouse (threatened, recently recommended for de-listing), bald eagle (threatened), Colorado butterflyplant (threatened), and Ute ladies tresses (threatened). Western would minimize the potential to impact these species through pre-construction surveys and a variety of avoidance measures. Avoidance and mitigation measures for TEP&C species are incorporated in Western's standard construction and mitigation measures. The downstream Platte River species could be affected if water is used for dust control during construction of the Snowy Range Substation, but mitigation would not be required because the U.S. Forest Service and the USFWS have provided funds to the Fish and Wildlife Foundation account for the purposes of offsetting the adverse effect of Federal agency actions resulting in minor water depletions, such as the CH-MM and AU-CH project. The impacts of the alternatives would be the same as the proposed project.

**Cultural Resources** – Class I and Class III cultural resource surveys have been conducted for the proposed project and alternatives. Significant cultural resources are defined as those listed on, or eligible for listing on, the National Register of Historic Places (NRHP). Fifteen eligible or recommended as eligible sites were recorded on the CH-MM transmission line ROW and 5 eligible or recommended as eligible sites were recorded on the AU-CH transmission line ROW. Western's Standard Construction and Mitigation Practices would be implemented to minimize the impacts on cultural resources, which include avoiding direct impacts to sites where feasible through careful pole placements, removing existing structures by cutting structures at ground surface, and avoidance of sites during construction. If avoidance of all eligible sites is not feasible, a mitigation plan would be implemented prior to construction. Impacts from the alternatives would be the same or similar to those of the proposed project. Three significant sites lie along CH-MM Alternative Route 1, Part A, however, the segments of these eligible resources within the project area are considered non-contributing portions.

**Land Use, Socioeconomics, Community Resources, and Transportation** – The land use of the project area is predominantly open space land area, with Western's existing transmission lines and ROWs being established land uses since the 1930's. Large ranches, rangeland, dryland farming and irrigated fields are the predominant uses within and adjacent to the project ROWs. Developed park and recreation areas are limited in the project area to the vicinity of the Miracle-Mile Substation, where recreation use occurs at the Seminoe State Park and Reservoir. The Bennett Mountains Wilderness Study Area (WSA) is also located immediately adjacent to the ROW near Seminoe State Park and Reservoir. Developed community areas are also adjacent to the CH-MM ROW where the transmission line crosses through portions of Laramie, Wyoming and Cheyenne, Wyoming, and where the AU-CH ROW similarly crosses through parts of

Cheyenne, Wyoming and developing residential communities in Southern Wyoming. Two interstate highways (I-80 and I-25) and six US and State highways serve the area, including US 287/30 and US 85).

The proposed project and alternatives would result in minor, short-term impacts to quality of recreational experiences at the state park, reservoir and WSA due to the intermittent and temporary presence of construction crews, equipment, and related noise, dust, and visual effects. Long-term, land use impacts would be very minor, since the proposed project and alternatives replace existing transmission lines along the same ROW. Overall, the proposed project would likely result in fewer structures being located on private properties and public lands due to the greater span length of the 230-kV structures. Due to the open space character of much of the project area, increased land use restrictions, potentially resulting from the wider ROW are unlikely to affect existing or planned land uses.

Through the developed community area of Cheyenne, Western is not proposing to widen the ROW. Consequently, land use impacts and ROW restrictions would not change over the existing conditions. However in the Laramie area, the ROW would increase from 50 to 105 feet wherever there is 230-kV H-Frame construction, for the proposed project and/or Alternative Route 1, Part A. This would extend from MP 91 to MP 100 for the proposed project and from the west split to Snowy Range Substation at MP 9, along the stretch of the existing HJ-MM ROW for Alternative Route 1, Part A. For Alternative Route 1, Part B, the ROW for the 115-kV construction (wood H-frame and single pole steel) would also increase from 50 feet to 70 feet in Laramie. This would occur from MP 91 to MP 100 at the Snowy Range Substation. These increases in ROW width in the more developed area around Laramie would not change existing land uses or interfere with current land use activities.

The proposed project would also result in less frequent maintenance activities being necessary during the life of the project. Consequently, the proposed project and/or alternatives would have long-term beneficial effects to land uses that may be sensitive to noise or dust impacts from periodic maintenance activities.

The CH-MM Alternative Route 1, Parts A and B would not change the existing land uses. Part B would have a slightly beneficial impact on land uses between MP 97 and MP 99 where the HJ-MM 115-kV transmission line would be rerouted along the existing CH-MM ROW. Within this area, the wood H-frame structures would be replaced by single circuit single pole steel structures. The increased span of the single pole steel structures would reduce the number of structures located within this agricultural and industrial area, which could positively impact land uses. Replacement of the wood H-frames in this area would also reduce the potential impact on wetlands, since the single pole steel structures would likely require less maintenance.

The AU-CH Alternative Route 2 would result in reduced long-term impact to land uses compared to the proposed project. The AU-CH Alternative Route 2 would reduce on-going land use impacts to several landowners and irrigated agricultural fields, by co-locating Western's existing ROWs adjacent to one another. Land use impacts of the proposed Snowy Range Substation site is similar and minor, since the site is an open space with no known proposed uses.

The proposed project and alternatives would have no long-term adverse impacts to socioeconomic conditions, community resources, or transportation systems. Short-term impacts would be beneficial economic activity in the project area.

**Visual Resources** – Visual resources in the project area include the Seminoe State Park and Reservoir, Bennett Mountain Wilderness Study Area in Wyoming; major travel routes in Wyoming and Colorado, including I-25, I-80, US 287/30, US 85, a number of Wyoming and Colorado State routes and residential areas and communities of Wyoming including portions of the incorporated communities of Laramie and Cheyenne, and unincorporated residential areas and recently developing subdivisions in southern Wyoming.

Visual impacts would occur during the short-term construction phase of the project, due to the presence of construction equipment, crews, and related dust. Long-term visual changes would result from the presence of the new transmission structures, hardware and conductors. Along the majority of the proposed project, Western would replace existing 115-kV wood H-frame structures, hardware and conductors with slightly taller and heavier structures and hardware that would be very similar in line, form, color and texture to the 115-kV facilities that would be removed. Consequently, the perceived visual changes would be very weak. Visual changes would also be minor and only slightly adverse along the vast majority of the project area, since there are few viewers along much of the project area..

The visual changes brought about by the proposed project would be more noticeable where Western is proposing to install the 115-kV/230-kV single pole steel structures through urbanizing areas of southern Wyoming. West of the Cheyenne Substation, the visual impacts of the project would range from slightly adverse to beneficial depending on viewer perception. In this area, Western would replace both the CH-MM and HJ-MM 115-kV H-frame structures with one set of single pole steel structures. Overall, beneficial visual impacts would result since there would be fewer structures and the single pole steel design is visually more compatible with urban design features. The proposed project would be more visually noticeable, however, since it would be approximately twice as tall as the 115-kV H-frame structures that would be replaced. South of the Cheyenne Substation, Western would also install the taller single pole steel structures through developing residential areas of southern Wyoming. Overall, the visual impacts to area residents, resulting from the increased height of these structures would be adverse, but less than significant. While the structure heights would be noticeably taller than the 115-kV wood H-frame structures, the spacing of the 230-kV structures would be greater, thus resulting in a reduction in the total number of structures seen.

The types of visual changes associated with CH-MM Alternative Route 1 would be similar in degree to the proposed project. The CH-MM Alternative Route 1, Part A, would result in slightly adverse long-term visual impacts, since the new 230-kV wood H-frame structures would be approximately 70 feet tall compared to the existing HJ-MM 115-kV structures, which have average heights of 52 feet. Overall, Part A of CH-MM Alternative Route 1 would result in weak visual contrasts in structure design and height compared to the existing setting.

CH-MM Alternative Route 1, Part B would cause long-term visual changes to the existing visual environment between MPs 97 and 99. From MP 91 to 97, the new 115-kV structures would be the same in design, height and material as the existing 115-kV structures which would be removed. The new structures would be wood H-frame in design and have typical heights of 52 feet. Consequently, no long-term visual effects would occur along this segment of the alternative. From MP 97 to 99, new single pole steel 115-kV structures would replace the existing H-frame wood structures. The proposed single pole steel structures would be approximately 82 feet tall, compared to the existing H-frames that have a typical height of 52 feet. This change in height would occur in industrial and agricultural areas west of Laramie primarily. Visual impacts from the increased height of the single pole steel structures would be mitigated or offset by both the single pole design and the reduction in the total number of structures. Consequently, on balance,

this alternative would result in similar or less visual effects than currently occur from the existing 115-kV structures and lines.

The AU-CH Alternative Route 2 would result in similar minor and less than significant visual impacts as described for the proposed project and would improve the visual conditions for the residences affected by the alternative reroutes.

Table S-1. Summary Comparison of Impacts - Proposed CH-MM and AU-CH Transmission Rebuild Projects and Alternatives

Issues	CH-MM Transmission Line Rebuild			AU-CH Transmission Line Rebuild		No Action
	Proposed Rebuild Project	CH-MM Alternative Route 1	Proposed Snowy Range Substation	Proposed Rebuild Project	AU-CH Alternative Route 2	
Climate and Air Quality	Slightly adverse effects. Short-term increases in particulates and vehicle emissions. Long-term beneficial reduction in emissions.	Same	Slightly adverse. Short-term increases in particulates and vehicle emissions.	Same as CH-MM	Same	Not significant. Long-term increase in vehicle emissions due to more frequent maintenance activities
Geology, Soils and Paleontology	Slightly adverse to beneficial effects. Short-term soil disturbance. Short-term and long-term inadvertent loss of fossil deposits. Potential beneficial discovery of new fossils. Long-term beneficial reduction in soil disturbance from decreased maintenance activity.	Same	Slightly adverse. Short-term soil disturbance No identifiable paleontological impact.	Same as CH-MM	Same	Not significant. Increase in soil erosion from more frequent maintenance activities.
Water Resources	Slightly Adverse. Indirect potential short-term impacts to 195 surface water bodies from construction related activities including increased sedimentation and potential for spills. Long-term beneficial reduction in soil disturbance from decreased maintenance activity.	Same. Slightly adverse. An additional 7 surface water bodies would be crossed with Alternative Route 1, Parts A and B. Greater potential for surface water run-off. However, impacts are not considered significant with implementation of mitigation measures.	Slightly adverse. Potential for short-term increases in sedimentation and potential for spills.	Slightly Adverse. Indirect potential short-term impacts to 37 surface water bodies from construction related activities including increased sedimentation and potential for spills. Long-term beneficial reduction in soil disturbance from decreased maintenance activity.	Same impacts as proposed Project. Alt. Rt. 2 does not cross any surface water bodies, nor does the corresponding section of the proposed project.	No identifiable impacts.

Table S-1. Summary Comparison of Impacts - Proposed CH-MM and AU-CH Transmission Rebuild Projects and Alternatives

Issues	CH-MM Transmission Line Rebuild			AU-CH Transmission Line Rebuild		No Action
	Proposed Rebuild Project	CH-MM Alternative Route 1	Proposed Snowy Range Substation	Proposed Rebuild Project	AU-CH Alternative Route 2	
Floodplains and Wetlands	Adverse, less than significant. All wetlands and floodplains would be spanned, except direct disturbance to floodplains from location of 2 structures would result, similar to the existing conditions. Indirect potential short-term impacts to wetlands and floodplains from construction related sedimentation and spills. No significant impacts. Long-term beneficial reduction in soil disturbance from decreased maintenance activity.	Similar long-term impacts. Alternative Route 1 would require 2 additional structures in floodplains, as compared to the proposed project. Short-term impacts would be slightly greater. An additional 0.3 acres short-term disturbance.	No identifiable impacts.	No direct impacts. Indirect potential short-term impacts to wetlands and floodplains from construction related sedimentation and spills. No significant impacts. Long-term beneficial reduction in soil disturbance from decreased maintenance activity.	No direct or indirect impacts. Impacts would be the same as the corresponding section of the Proposed AU-CH Project.	No identifiable impacts
Vegetation	Potential adverse impacts, due to vegetation loss and potential for spread of invasive (weed) species. Short-term vegetation disturbance of 414 acres from construction related activity. Long-term disturbance of 0.9 acre. Minor long-term beneficial effects would result from reduction in vegetation disturbance from decreased maintenance activity.	Short-term vegetation disturbance of 438 acres versus 414 for proposed project. Similar long-term impacts (0.9 acres) to proposed project. Similar impacts as corresponding section of proposed project. Riparian vegetation disturbance slightly greater (approx. 0.3 acre).	Slightly Adverse. Long-term loss of 16 acres of short-grass prairie vegetation. Potential for weed invasion.	Potential adverse impacts, due to vegetation loss and potential for spread of invasive (weed) species. Short-term vegetation disturbance of 87 acres from construction related activity. Long-term disturbance of 0.1 acre.	Same	No identifiable impacts

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Issues	CH-MM Transmission Line Rebuild			AU-CH Transmission Line Rebuild		No Action
	Proposed Rebuild Project	CH-MM Alternative Route 1	Proposed Snowy Range Substation	Proposed Rebuild Project	AU-CH Alternative Route 2	
Wildlife	Slightly adverse, less than significant impact. Potential short-term mortality of wildlife, and other species during construction. Impacts to pronghorn and elk minimized by no construction in crucial winter range Nov. 15 to April 30. Potential long-term impacts to raptors (111 raptor nests known to occur within 0.5 mi of ROW), upland game birds (22 greater sage-grouse leks known to occur within 2 mi of ROW), and other birds minimized with Westerns Standard Construction and Mitigation Practices	Similar, except slightly greater potential to impact water birds along Laramie River. No habitat for greater sage-grouse or leks occur on Alt. Route 1.	Slightly adverse impacts. Potential short-term mortality of wildlife from collision with construction related vehicles.	Same types of impacts as CH-MM.	Same	No identifiable impacts
Special Status and Sensitive Species	Potential adverse impacts to special status and sensitive wildlife and plant species are related to construction activities. Listed Species in project area include Preble's meadow jumping mouse, bald eagle, Colorado butterflyplant, Ute ladies'-tresses Impacts to BLM-sensitive and WNDD-tracked species may occur. Long-term potential mortality from power line collision for some species	Similar to proposed project. Slightly more potential Ute-ladies'-tresses habitat affected, but project is still not likely to adversely affect Ute ladies'-tresses.	Likely to adversely affect downstream Platte River species if water is used for soil compaction during substation construction. Once the amount of water to be used has been determined and prior to substation construction, Western would consult with the USFWS on effects to Platte River species.	Same as CH-MM except no designated Preble's meadow jumping mouse critical habitat occurs along ROW only along streams.	Same	No identifiable impacts
Cultural Resources	Long-term potential to adversely impact 12 recommended as eligible sites from construction activities. No significant impact.	Three eligible sites could potentially be affected, but no adverse or significant impacts anticipated.	No identifiable impacts	Long-term potential to adversely impact 5 eligible or recommended as eligible sites from construction activity. No significant impact.	No identifiable impacts.	Adverse effect on historic sites from continued and frequent maintenance activity. No significant impact.

Table S-1. Summary Comparison of Impacts - Proposed CH-MM and AU-CH Transmission Rebuild Projects and Alternatives

Issues	CH-MM Transmission Line Rebuild			AU-CH Transmission Line Rebuild		No Action
	Proposed Rebuild Project	CH-MM Alternative Route 1	Proposed Snowy Range Substation	Proposed Rebuild Project	AU-CH Alternative Route 2	
Land Use	Slightly Adverse, short-term dust, noise, and nuisance impacts to land uses from construction activity. Long-term slightly adverse impacts from wider ROW and easement restrictions. Beneficial impact from reduced maintenance activity and reduction in number of structures.	Similar short-term impacts as proposed project. Slightly higher short-term land disturbance (438 vs. 414 acres). Slightly beneficial impacts to agricultural activities with reduction in number of structures along Part B of Alt. 1.	No identifiable impacts.	Slightly Adverse, short-term dust, noise, and nuisance impacts to land uses from construction activity. Long-term adverse impacts from widen ROW and easement restrictions through residential subdivisions south of Cheyenne.	Same types of impacts as proposed project. Beneficial impacts to agricultural land uses due to ROW realignments.	Adverse impacts to land owners and land uses from maintenance activities would continue.
Socioeconomics	Short-term beneficial impacts including increased economic activity in local jurisdictions from construction workforce, contractor, and Western expenditures.	Same	Similar to proposed project; higher income generation with larger workforce.	Same as CH-MM	Same	No new economic activity in region from new construction activity.
Transportation	Short-term increase in construction traffic on major and minor thoroughfares. Short-term traffic delay potential. Noise, dust, and nuisance in residential and commercial subdivisions from construction traffic.	Same	Same	Same as CH-MM	Same	Potential for increased maintenance traffic on local roadways.
Visual	Slightly adverse to adverse visual impacts resulting from larger scale H-frame structures or taller single pole steel structures in visually sensitive park, recreation, residential areas and near major travel routes. Potentially affected areas include Bennett Mountain WSA, Seminole State Park, residential areas near Laramie and Cheyenne Wyoming, and views to highways and roads at crossings and parallel locations.	Similar to proposed project. Slightly improved conditions along Alt. 1 Part B with increased span of single pole steel structures, i.e. fewer structures in some locations, less visual impact. Visual contrast weak to moderate.	Slightly adverse landscape and visual impacts. Few sensitive viewers present.	Adverse long-term visual impacts to residential subdivisions south of Cheyenne.	Slightly adverse visual impacts. Impacts would be less than with corresponding section of proposed project due to ROW realignments.	No impact.

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